

What is claimed is:

5 1. A data transfer control circuit for carrying out data transfer by using a plurality of bus masters, comprising:  
a data bus connected to a peripheral apparatus and composed of a plurality of unit data buses each capable of carrying out data transfer independently;

10 a plurality of bus masters each for sending a request signal requesting a use of said data bus in unit data buses, and using said data bus in unit data buses requested when a request by means of said request signal is granted; and

15 a bus controller for split-controlling said data bus in unit data buses for said plurality of bus masters by giving a grant signal which grants the use of said data bus in unit data buses requested in unit data buses to said bus masters in accordance with an availability of said data bus in unit data buses.

20 2. The data transfer control circuit according to claim 1, wherein:

said bus controller gives the grant signal of the use of said data bus to said bus masters upon receipt of one of a request and release of the use of said data bus in unit data buses inputted from said bus masters.

25 3. The data transfer control circuit according to claim 1, wherein:

said bus controller includes a monitor circuit for monitoring the availability of said data bus in unit data buses.

30 4. The data transfer control circuit according to claim 3, wherein:

said bus controller judges whether said data bus is available in unit data buses based on a monitoring result by said monitor circuit, and when said data bus is available, said bus controller gives the grant signal of the use of said

data bus to said bus master.

5. The data transfer control circuit according to claim 3, wherein:

5       said bus controller sends a state signal indicating the availability of said data bus in unit data buses to each of said bus masters based on a monitoring result of said monitor circuit.

10       6. The data transfer control circuit according to claim 1, wherein:

      said request signal includes information specifying each unit data bus in said data bus.

15       7. The data transfer control circuit according to claim 1, wherein:

      said request signal includes information specifying the number of the unit data buses in said data bus.

20       8. An information processing system for carrying out data transfer by using a plurality of bus masters, comprising:

      a peripheral apparatus;

25       a data bus connected to said peripheral apparatus and composed of a plurality of unit data buses each capable of carrying out data transfer independently;

      a plurality of bus masters each for sending a request signal requesting a use of said data bus in unit data buses, and using said data bus in unit data buses requested when a request by means of said request signal is granted; and

30       a bus controller for split-controlling said data bus in unit data buses for said plurality of bus masters by giving a grant signal which grants the use of said data bus in unit data buses requested in unit data buses to said bus masters in accordance with an availability of said data bus in unit  
35 data buses.

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Is! 9. The information processing system according to claim 8, wherein:

5 said bus controller gives the grant signal of the use of said data bus to said bus masters upon receipt of one of a request and release of the use of said data bus in unit data buses inputted from said bus masters.

10 10. The information processing system according to claim 8, wherein:

said bus controller includes a monitor circuit for monitoring the availability of said data bus in unit data buses.

15 11. The information processing system according to claim 10, wherein:

said bus controller judges whether said data bus is available in unit data buses based on a monitoring result by said monitor circuit, and when said data bus is available, said bus controller gives the grant signal of the use of said data bus to said bus master.

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12. The information processing system according to claim 10, wherein:

25 said bus controller sends a state signal indicating the availability of said data bus in unit data buses to each of said bus masters based on a monitoring result of said monitor circuit.

30 13. The information processing system according to claim 8, wherein:

said request signal includes information specifying each unit data bus in said data bus.

35 14. The information processing system according to claim 8, wherein:

said request signal includes information specifying the number of the unit data buses in said data bus.

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15. A method of carrying out data transfer by using a plurality of bus masters, comprising the steps of:

generating a request signal requesting a use of a data bus in unit data buses in each of a plurality of bus masters and sending said each request signal to a bus controller, said data bus being connected to a peripheral apparatus and composed of a plurality of unit data buses each capable of carrying out data transfer independently;

10 sending, in response to said request signal, a grant signal granting the use of said data bus in unit data buses requested in unit data buses to said bus master in accordance with an availability of said data bus in unit data buses; and occupying said data bus granted by  
15 said grant signal in unit data buses, and carrying out data transfer by using the unit data buses thus occupied.

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20 16. The method according to claim 15, wherein:  
in said grant signal sending step, the grant signal of the use of said data bus is given to said bus master upon receipt of one of a request and release of the use of said data bus in unit data buses inputted from said bus master.

25 17. The method according to claim 15, further comprising the step of:

monitoring the availability of said data bus in unit data buses.

30 18. The method according to claim 17, wherein:  
in said grant signal sending step, whether said data bus is available in unit data buses is judged based on a monitoring result in said monitoring step, and when said data bus is available, the grant signal of the use of said data bus is given to said bus master.

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19. The method according to claim 17, wherein:

in said grant signal sending step, a state signal indicating the availability of said data bus in unit data buses is sent to each of said bus masters based on a monitoring result in said monitoring step.

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20. The method according to claim 15, wherein:

said request signal includes one piece of information specifying each unit data bus in said data bus or information specifying the number of the unit data buses in said data bus.

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